A case report of a successful multidisciplinary management of an abdominal pregnancy

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Citation
Fernández F, Márquez I, Herrera RG, Huaman A, Apaza A, Coronado J, et al. A case report of a successful multidisciplinary management of an abdominal pregnancy. *Medwave* 2023;23(1):e2647

DOI
10.5867/medwave.2023.01.2647

Submission date
Aug 3, 2022
Acceptance date
Dec 29, 2022
Publication date
Jan 25, 2023

Keywords
Abdominal Pregnancy, Ectopic Pregnancy, Salpingectomy, Uterine Artery Embolization

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Abstract

Abdominal pregnancy is defined as one that occurs outside of the uterus and fallopian tubes in the abdominal cavity. We present the case of a 30-year-old Peruvian female patient from Lima with a surgical history of exploratory laparotomy due to tubal ectopic pregnancy and appendectomy without further relevant personal or family histories. She attended the emergency room of a social security hospital in Peru with a referral from a district hospital and a diagnosis of abdominal pregnancy at 14 weeks of gestational age without previous prenatal controls. Symptomatology at hospital admission was colic-type abdominal pain in the hypogastrium without vaginal bleeding, fluid loss or fever. During hospitalization, she underwent an exploratory laparotomy with embolization of the uterine artery, left salpingectomy, and removal of the abdominal ectopic pregnancy. The evolution was favorable after the surgery, and she was discharged. Without further complications, she continues her controls at the obstetrics and gynecology outpatient service without complications.

Main messages

- An abdominal pregnancy has non-specific symptoms such as abdominal pain and amenorrhea.
- Prior surgery is the leading risk factor for abdominal pregnancy.
- A complete and thorough evaluation should be performed, including the patient's opinion.
- An immediate surgical approach is recommended to minimize complications of abdominal pregnancy.

Introduction

Ectopic pregnancy is defined as one that occurs outside the uterus. During the first trimester, it represents between 0.5% to 1.5% of all pregnancies [1,2]. Approximately 95% of ectopic pregnancies implant in different segments of the fallopian tube, the ampulla being the most frequent site (70%), followed by the isthmic (12%), fimbriae (11%), and interstitial tubal (2%) [1,3]. Non-tubal ectopic pregnancies have implantation in the ovary, peritoneal cavity, cervix, or a previous uterine scar [3,4].

The incidence of abdominal pregnancy, whose implantation occurs at the level of the peritoneal cavity, varies greatly depending on the geographical region, ranging from one in 5000 to 10 000 of all pregnancies [2,5]. In the United States, an incidence of one in 10 000 pregnancies is described [4]. Meanwhile, in Peru, only a few isolated case reports were found, without information on the incidence of abdominal ectopic pregnancy, probably due to under-reporting.

Risk factors for abdominal pregnancy include pelvic inflammatory disease, previous tubal damage, previous cesarean section, endometriosis, assisted reproductive techniques, and multiparity [4,6].

The risk of mortality in abdominal pregnancy is approximately eight times higher than in tubal pregnancy and 90 times higher than in intrauterine pregnancy, resulting in a significant high-risk pregnancy [2,3,7].

Gamboa's 2012 case report at the National Maternal Perinatal Institute in Lima, Peru, described a 32-year-old female patient with an abdominal pregnancy at 39 weeks of gestational age who underwent an exploratory laparotomy with the extraction of a live fetus and its placenta followed by a favorable evolution of mother and newborn [8].

Few cases of this unusual ectopic pregnancy have been reported in Peru. We present the case of an abdominal pregnancy treated with embolization of the uterine arteries before laparotomy.

Case presentation

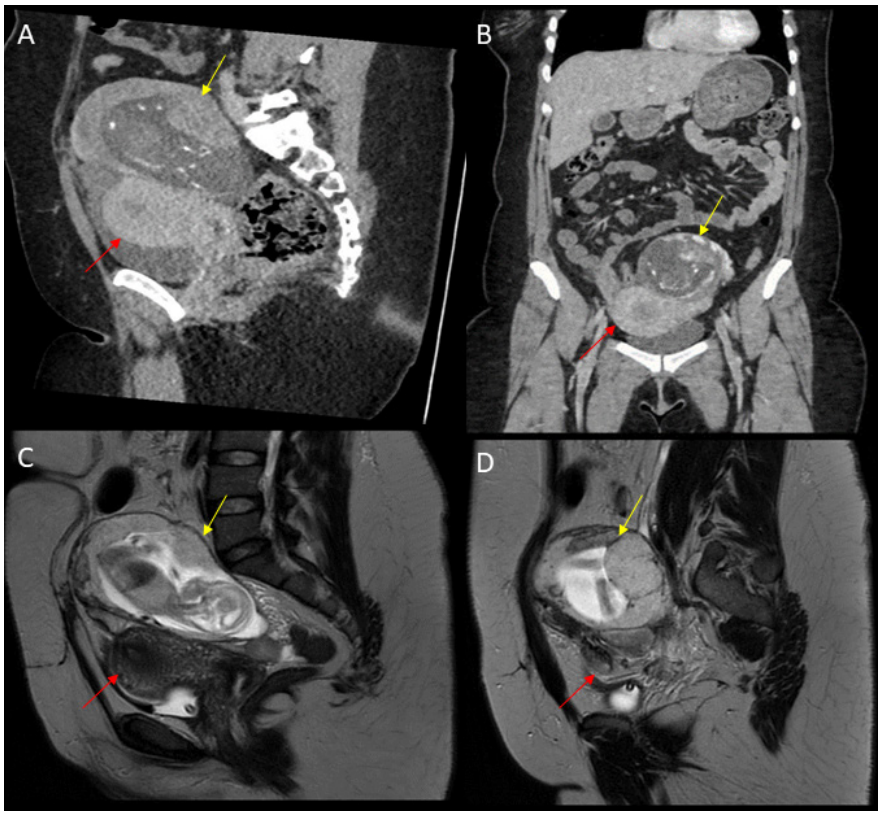
A 30-year-old Peruvian female patient with two previous pregnancies was transferred to our hospital from the jungle with a diagnosis of abdominal pregnancy of 14 weeks gestational age according to her last menstrual period, with an active uncomplicated abdominal ectopic pregnancy confirmed by her first obstetric ultrasound, as part of her regular prenatal controls. Her surgical history mentioned an exploratory laparotomy due to a complicated right tubal ectopic pregnancy two years before admission. On admission, she reported pain in the hypogastrium of colic-menstrual type, without vaginal bleeding or loss of amniotic fluid. In addition, she did not perceive fetal movements. Her vital signs were: temperature 36.8°C (98.2°F); heart rate: 78 per minute; respiratory rate: 18 per minute; blood pressure: 110/70 mmHg. On physical examination, she had a distended abdomen with an infraumbilical paramedian scar and a palpable non-painful mass of approximately 14 cm at the hypogastrium.

A speculoscopy was performed, with no relevant findings. Pelvic ultrasound showed an anteverted uterus with a regular surface, a homogeneous myometrium of 87 mm x 60 mm x 70 mm, and a homogeneous endometrium of 13 mm; annexes could not be detected. An active extrauterine pregnancy occupied the pouch of Douglas, with a developing grade one placenta, adequate amniotic fluid, and an active singleton fetus with present fetal movements. Fetal biometry: biparietal diameter: 25.8 mm; cephalic diameter: 101.2 mm; abdominal circumference: 95.6 mm; femoral length: 14.3 mm; fetal weight: 110g; gestational age: 14 weeks and six days for fetal biometry; fetal cardiac beats: 160 beats per minute.

A computed tomography study was performed to distinguish the anatomical relationships and location of the fetus (Figure 1), and magnetic resonance imaging was performed to visualize the intra-abdominal placental implantation (Figure 1). Additionally, arteriography was performed, which confirmed placental vascularization from the left uterine artery. Embolization was performed before the surgery to avoid bleeding during placental removal (Figure 2). The patient was scheduled for exploratory laparotomy, finding the amniotic sac with the placenta on its anterior face, attached to the upper part of the left uterine tube, mesosalpinx, omentum, and peritoneum; the uterus of approximately six cm presented smooth edges and no macroscopic alterations.

There were multiple adhesions on the right side of the uterus, making it impossible to define the right adnexa; firm adhesion of the ascending colon to the aponeurotic wall; multiple adhesions of the omentum and mesentery to the posterior face of

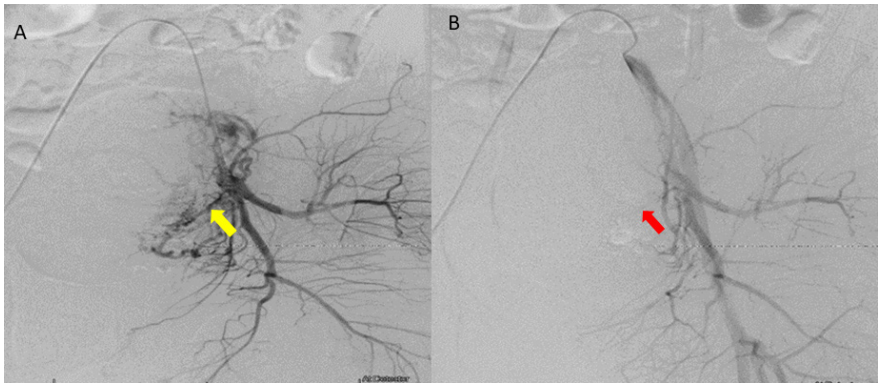
Figure 1. (A, B) Abdominopelvic computed tomography showing an extrauterine ectopic gestation of intra-abdominal location and a single developing fetus. Yellow arrow: intra-abdominal gestation. Red arrow: uterus. (C, D) Magnetic resonance imaging in a T2-weighted sagittal plane image shows in better detail the intra-abdominal ectopic gestation (yellow arrow) located above the uterus (red arrow) with an adequately detailed gestational sac-uterus interface. No infiltration is seen, and the exact site of placental implantation is appreciated.



Source: Prepared by the authors.

the amniotic sac. A left salpingectomy was performed with the extraction of the fetus and placenta (Figure 3). The estimated intraoperative blood loss was 700 ml. The patient had an uncomplicated postoperative course and was discharged on the tenth day. During outpatient follow-up, she did not present any complications.

Figure 2. (A) Intra-abdominal selective angiography image showing placental vascular dependence of the uterine artery (yellow arrow). (B) Post-embolization intra-abdominal selective angiography of ectopic pregnancy showing absence of vascular supply (red arrow).



Source: Prepared by the authors.

Figure 3. Fetus and placenta.

Source: Prepared by the authors.

Discussion

Ectopic pregnancy is defined as one that occurs outside the uterus; hemorrhage is its main complication and carries a high mortality rate [1,9,10].

Abdominal pregnancy is difficult to diagnose and may go unnoticed until late gestational ages because its clinical manifestations are non-specific: persistent abdominal or suprapubic pain, amenorrhea, and gastrointestinal symptoms [11,12]. In this case, the patient presented abdominal pain and amenorrhea.

Imaging tests (ultrasound, computerized tomography, magnetic resonance imaging, and angiography) help to confirm the diagnosis of an extrauterine or extratubal pregnancy. Ultrasonography should be the first test to be performed. Computerized tomography is helpful in cases of suspected intra-abdominal ectopic pregnancy, as it helps to locate the gestational sac and describe its implantation. Contrast studies such as angiotomography are essential to assess arterial and venous vascularization, as it allows physicians to determine the treatment plan [13].

Magnetic resonance imaging allows for determining the anatomy and relationships of the adjacent structures. Furthermore, it helps to locate the exact implantation and insertion of the placenta. It has been described that placental insertion in abdominal pregnancies may vary widely; sometimes, the placenta is attached to vital anatomic structures such as the aorta, vena cava, kidneys, liver, or intestines, making the surgical approach quite challenging [10]. In this case, a multimodal imaging study was performed: computerized tomography with and without contrast followed by magnetic resonance imaging, which helped us determine the placental insertion and rule out the involvement of vital intra-abdominal organs.

Abdominal pregnancy is associated with a significant maternal mortality rate, ranging from 1% to 18%. Therefore, it should be surgically treated as soon as possible when the diagnosis is confirmed. Exploratory laparotomy is the gold standard for both early and advanced-stage abdominal pregnancy [14,15]. Elmisky and colleagues described two cases of abdominal pregnancy at nine and 15 weeks of gestation, respectively, who presented hypovolemic shock requiring emergency laparotomy and evolving favorably in the postoperative period, thus highlighting that laparotomy is a better option than laparoscopy in these cases, due to the risk of perioperative hemorrhage, which can be uncontrollable from the implantation site [16]. This was also confirmed by Estrada et al. in their two reported cases of abdominal pregnancy at 16 and 26 weeks of gestation, respectively [17]. Despite this, some authors choose laparoscopic surgery instead of laparotomy if the abdominal pregnancy is diagnosed at an early age (< 12 weeks) or if the implantation site allows a non-hemorrhagic surgical excision [18].

Prior to laparotomy, in selected cases of non-complicated abdominal pregnancy, placental arterial embolization can be performed to reduce the risk of maternal hemorrhage and death during the placenta removal [14,19]. This procedure is safe and effective for this purpose. This was demonstrated by Frischhertz et al. who reported the case of a patient with a non-complicated abdominal pregnancy at 20 weeks of gestation who underwent pelvic angiotomography, finding hypertrophied uterine arteries with the left greater than the right, irrigating a hypervascular placenta, with subsequent placental

arterial embolization before the exploratory laparotomy [20]. Methotrexate as a medical treatment after abdominal ectopic pregnancies shows no evidence to support its effectiveness, mainly due to late diagnosis [21,22]. In this case, methotrexate was not used as the placenta and fetus were removed entirely.

A multidisciplinary approach is recommended since patients with abdominal pregnancy may require interventional radiology, gynecology, and surgical evaluations. In our case, our patient underwent multiple imaging studies to better characterize the anatomic structure and embolize the uterine arteries to reduce bleeding complications during surgery. Later, an exploratory laparotomy was performed by the gynecology and general surgery services. Our patient did not present any complications related to all the invasive procedures. In our case, it was decided to terminate the pregnancy due to early gestational age, considering the risks and evidence of a better prognosis for the mother. Some studies argue for expectant management in abdominal pregnancy after 24 weeks of gestational age since they may have better rates of fetal viability [23].

Conclusion

Abdominal pregnancy must be considered in childbearing women with non-specific abdominal symptoms and amenorrhea. Clinicians should look for risk factors in their medical history and current health problems. A complete evaluation with imaging tests should be performed. Pregnancy termination should involve a multidisciplinary team, including the patient's decision. The surgical approach is the standard of care to avoid complications and thus reduce maternal mortality.

Notes

Contributor roles

FF, IM, RGH, JC, FZG: Conceptualization, writing, review and editing; PJR: Review, editing and translation; MCZ: Conceptualization, writing, review, editing and translation; ARY: Conceptualization, resources, supervision, writing, review and editing.

Competing interests

The authors have completed the ICMJE conflict of interest statement and declare that they received no funding for the completion of this article; they have no financial relationships with organizations that may have an interest in the article published in the last three years, and they have no other relationships or activities that could influence the publication of the article. The forms can be requested by contacting the corresponding author.

Funding

This study was funded by the authors.

Ethical considerations

Authorization and written informed consent were obtained from the patient for the publication of this clinical case and the attached images.

Provenance and peer review

Not commissioned. Externally peer-reviewed by three peer reviewers, double-blind.

Language of submission

English. A Spanish version is not available.

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Manejo multidisciplinario exitoso del embarazo abdominal. Reporte de un caso peruano

Abstract

El embarazo abdominal es aquel embarazo que ocurre fuera del útero y las trompas de Falopio en la cavidad abdominal. Presentamos el caso de una paciente peruana de 30 años proveniente de la ciudad de Lima, con antecedentes quirúrgicos de laparotomía exploradora por embarazo ectópico tubárico y apendicectomía, sin otras patologías ni antecedentes familiares de importancia. La paciente acude al servicio de urgencias de un hospital del seguro social en Perú derivada de un hospital distrital con diagnóstico de embarazo abdominal a las 14 semanas de edad gestacional, sin controles prenatales previos. La sintomatología al ingreso hospitalario fue dolor abdominal de tipo cólico a nivel del hipogastrio, sin sangrado vaginal, pérdida de líquidos o fiebre. Durante su hospitalización se le realizó una laparotomía exploratoria con embolización de la arteria uterina, salpingectomía izquierda y extracción del embarazo abdominal. La evolución fue favorable tras la intervención quirúrgica, siendo dada de alta. Actualmente continúa sus controles en el servicio de consulta externa del servicio de ginecología y obstetricia sin complicaciones.